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in it to admit of creeping through. In another of these halls or galleries a curtain hangs gracefully down at one side, occupying nearly half the opening. After much rain the bottom is, in many places, very wet; but even these spots have their beauties, for, in the pools thus formed, some of the most elegant crystallizations are going forward.—The opening to this cavern is situated about a quarter of a mile N. E. of the entrance of the long known and remarkable cave of *Oonahareaglisha*, on the lands of Skeheenarinka, and in the same hill side, but does not appear to communicate with it, extending below in nearly an eastern direction. It is in the estate of the Earl of Kingston, and has been visited by Lord Kingsborough, who has directed that the spars, &c. shall be carefully preserved from injury. It is difficult to form an accurate estimate of distance or space under the circumstances which attend a visit to this place, yet it may be computed that the cave extends from a quarter to half a mile in some directions, and probably much further, as a large portion of it remains still unexplored. The height of the roof is, in some places, from twenty to thirty feet.

EXTRAORDINARY CAVERNS NEAR KILKENNY.

About two miles from the city of Kilkenny, in the neighbourhood of the Park-house of the Dunmore family, are a number of caves, as curious, though not so extensive as those mentioned in the foregoing article. They are thus mentioned by a visitor:—

“After a difficult descent of about one hundred feet, the entrance into this subterranean world is gained.—The appearance of the first cavern is uncommonly awful, and gives rise to the idea of a Gothic structure, grand in ruin. The solemnity of this place is not a little increased in its effect by contrast with the gaiety of those scenes which present themselves on every side previous to our entering it. The floor is uneven, and stones or rocks of various sizes are scattered over it. The sides are composed of ragged rock, in some parts covered with moss, and in others curiously frosted; and from the arched roof several huge rocks project, that seem to threaten instant ruin. The circumference of this cave is not less than two hundred feet, and its height above fifty. There is a small, but continual dropping of water from the ceiling, and a few petrifications resembling icicles. This place has its inhabitants, for, on entering it you are surprised with a confused noise, occasioned by a multitude of wild pigeons, disturbed by your intrusion. From this apartment there is a passage to the left, where, by a small ascent, a hole is gained resembling the mouth of an oven, but larger, which introduces you to a place where, by the help of torches, day-light being entirely excluded, a surprising scene of monstrous stones piled on each other, and chequered with various colours, tremendous rocks, and an infinity of stalactites, presents itself. Nature, one would imagine, designed the first cave as a preparative for what remains to be seen: by it the eye is familiarized with uncommon and awful objects, and the mind totally fortified against terrors, the natural result of a combination of appearances so surprising, terrific, and menacing. The spectator flatters himself that he has nothing to behold more awful, nor anything more dangerous to meet, than what he finds in the first cavern. But he soon discovers his mistake, for the bare want of that light which dresses nature with gaiety, is alone sufficient to render the second far more dreadful. In the first place he fancies ruin frowns upon him from several parts; but in this it is more immediately threatened from a thousand rocks, rudely piled on each other, bursting in on him from the bending sides, or pendant from the roof, while by one false step you are dashed to pieces in the precipice beneath. It would indeed be impracticable to range over the apartment, had not nature, as if studious of the safety of the curious, caused spars to shoot from the surface of the rocks, which prevent your feet from slipping beneath, and at the sides serve as ladders, whereby you can ascend and descend with tolerable facility. This astonishing passage leads to an apartment far more curious than any of the rest. On entering it, one is induced to be-

lieve himself in some ancient temple, decorated with all the expense and magnificence of art; yet notwithstanding the splendour and beauty that catches the eye on every side, there is something of solemnity in the fashion of the place, which causes itself to be felt by the most indifferent spectator. The floor is covered with a crystalline substance, and the sides in many places encrusted with the same, fashioned in style not unlike the Gothic style of ornament; and the top is embossed with inverted pyramids of the like beautifully white and pellucid matter. At the points of these stalactites are perpetually hanging drops of pellucid water; for when one falls another succeeds. These splendid gems contribute not a little to the glorious appearance of the roof, which, when illuminated, appears as if formed of the purest crystal. Here also are three extraordinary and beautiful congelations, which, without the aid of a strong imagination, may be taken for an organ, an altar, and a cross. The former, except when strictly examined, appears to be a regular work of art, and is of considerable size: the second is of a simple form, rather long than square; and the cross reaches from the floor to the roof, which may be about twenty feet. These curious figures are produced by the water which distils from the upper part of the cave impregnated with lime, which by gradual petrification, acquired at length those forms now so pleasing. When this curious apartment has been sufficiently examined, the guides lead you a considerable way through winding passages, until a glimmering light agreeably surprises you. Here your journey—a quarter of a mile from the entrance—terminates: but on returning to the first cavern, an entrance into other apartments as extensive, though less curious, presents itself. The passages into some are so low, that you are obliged to creep through them; by these you proceed, till the noise of a subterraneous river is heard; but farther none have ventured.”

THE BOGS OF IRELAND.

Whether these morasses were at first formed by the destruction of whole forests, or merely by the stagnation of water in places where its current was choked by the fall of a few trees, and by accumulations of branches and leaves, carried down from the surrounding hills, is a question never yet decided. In a Report of the Commissioners on the Bogs of Ireland, published some years since, it is stated that three distinct growths of timber, covered by three distinct masses of bog, are discovered on examination; and it was given as the opinion of Professor Davy, that in many places, where forests had grown undisturbed, the trees on the outside of the woods grew stronger than the rest, from their exposure to the air and sun; and that, when mankind attempted to establish themselves near these forests, they cut down the large trees on their borders, which opened the internal heart, where the trees were weak and slender, to the influence of the wind, which, as is commonly to be seen in such circumstances, had immediate power to sweep down the whole of the internal part of the forest. The large timber obstructed the passage of vegetable recrement, and of earth falling towards the rivers; the weak timber, in the internal part of the forest, after it had fallen, soon decayed, and became the food of future vegetation. Mr. Kirwan, who wrote largely on the subject, observes, that whatever trees are found in those bogs, though the wood may be perfectly sound, the bark of the timber has uniformly disappeared, and the decomposition of this bark forms a considerable part of the nutritive substances of morasses; notwithstanding this circumstance, tan is not to be obtained in analysing bogs; their antiseptic quality is, however, indisputable, for animal and vegetable substances are frequently found at a great depth in bogs, without their seeming to have suffered any decay; these substances cannot have been deposited in them at a very remote period, because their form and texture is such as were common a few centuries ago. In 1786, there were found, seventeen feet below the surface of a bog, in Mr. Kirwan's district, a woollen coat of coarse, but even net work, exactly in the form of what is now called a spencer. A razor, with a wooden handle, some iron heads of a

rows, and large wooden bowls, some only half made, were also found, with the remains of turning tools; these were obviously the wreck of a work-shop, which was probably situate on the borders of a forest. These circumstances countenance the supposition that the encroachments of men upon forests destroyed the first barriers against the force of the wind, and that afterwards, according to Sir H. Davy's suggestions, the trees of weaker growth, which had not room to expand, or air and sunshine to promote their increase, soon gave way, and added to the increase.

PORTABLE CORN MILL.

The whole apparatus is contained in an iron case, about twelve inches long, eight broad, and nine deep, with which a man will grind as much flour in about two hours as a family of six persons consume in a week; and from the simplicity of its construction it is not liable to be out of order. Its principle is the same as the common corn mill in use, except instead of stones it has two hardened steel plates cut or grooved in the same manner as grinding stones, but working perpendicularly instead of horizontally.—The corn enters, between the plates near the centre. The moment it enters the running grinding plate begins to crush it, and as both plates are cut on their surfaces like the common mill-stone, the grain becomes continually more and more ground as it passes to the circumference, when it falls into a receiver. The two plates are kept in their position, and true to each other, by a strong iron frame, which frame supports one end of the axle, upon which there is a regulator, which determines the distance between the plates; by turning to the right or to the left, coarse or fine flour is obtained. The portability of this machine, the facility of working it, the quantity and quality of the flour which it produces, renders it one of the most important and useful inventions of this ingenious age. Private families, who wish to have their flour unadulterated, and persons going to, or residing in distant countries, must find it to be an invaluable acquisition.

PRESERVATION OF FROZEN POTATOES.

In time of frost, the only precaution necessary is to retain the potatoes in a perfectly dark place for some days after the thaw has commenced. In America where they are sometimes frozen as hard as stones, they rot if thawed in open day; but if thawed in darkness they do not rot, and lose very little of their natural odour and properties.

CURE OF WOUNDS IN ELM TREES.

Those elms which have running places, or ulcers, may be cured as follows:—Each wound to have a hole bored in it with an augur, and then a tube, penetrating an inch or less, is to be fixed in each. Healthy trees thus pierced give no fluid, but those which are unhealthy yield fluid, which increases in abundance with the serenity of the sky and exposure to the south. Stormy and windy weather interrupts the effect. It has been remarked, that in from twenty-four to forty-eight hours, the running stops, the place dries up, and is cured.

PRESERVATION OF FRUIT TREES FROM HARES.

According to M. Bus, young fruit trees may be preserved from the bites of hares, by rubbing them with fat, and especially hog's lard. Apple and pear trees thus protected, gave no signs of the attacks of these animals, although their feet-marks were abundant on the snow beneath them.

EGYPTIAN AZURE.

This beautiful pigment, which has preserved its brilliancy of tint for more than seventeen hundred years, may be easily and cheaply made:—fifteen parts of the carbonate of soda, with twenty of powdered opaque flints, and three of copper filings, when strongly heated together for two hours, will produce a substance, which, when powdered, will be of a fine deep sky blue, and closely resemble the Egyptian Azure in tint.

SIMPLE SCIENCE.

What is hydrogen gas? and what vulgarly called? Hydrogen combined with, or dissolved in, caloric. It is called inflammable air.

How does it appear that caloric, when added to substances, insinuates itself between their parts, and diminishes their solidity, lessening the solidity more and more, as more of caloric is added? Put ice in a kettle and place it on the fire—this addition of caloric will soon make it liquid; keep it longer on the fire (i. e. add more caloric) and it becomes still less solid, and all fumes away in vapour through the pipe of the kettle. On the same principle caloric melts lead.

How does it appear that the removal of caloric lets the particles of a body which it has separated, close together again, and that thus by taking away caloric you can bring back vapour to a fluid state, and turn a liquid to a solid? Put hot water into a bowl, and turn down a plate or saucer over it. The hot water will send up vapour, and on its reaching the surface of the saucer that is next it, will there part with some of its caloric to the colder saucer, which will absorb it; and the vapour having lost a portion of its caloric, will resume its liquid form, and be found in drops, or a sort of dew on the saucer.

What is soap? Soap is a combination of oil and alkali. Ashballs are the ashes impregnated with potash.

What is nitric acid? and what is it vulgarly called? It is composed of oxygen and nitrogen, or azote; and is vulgarly called *aqua fortis*.

What is nitre? and what is it vulgarly called? Nitre is a salt; and its proper name is nitrate of potash. It consists of *nitric acid* and potash. Nitre is vulgarly called saltpetre.

In what form does nitrous acid appear? Nitrous appears in the form of a gas, or, at least, a vapour; whereas, *nitric acid* is liquid.

In what form does the sulphurous acid appear? When the combustion of sulphur is slow, the flame is blue, and a suffocating vapour: this vapour is sulphurous acid. Sulphuric acid is liquid.

What is the vulgar name of sulphuric acid? Sulphuric acid is vulgarly called oil of vitriol.

Do we ever see pure alumine in nature, as we do pure carbon? *Sapphire* may be said to be *wholly* composed of this earth. It is a mere crystal of alumine. *Sapphire* is blue.

What is ruby? What is oriental topaz? They are but varieties of sapphire, consequently are wholly aluminous.

What is alum? It is a salt. Its proper name is sulphate of alumine, being composed of alumine, (which is its base,) united with sulphuric acid.

Which is the most abundant, and generally diffused of the metals—and where found? Iron; it is an ingredient in almost every rock, from the oldest to the newest; and is also found in many earthly and metalliferous minerals and in all soils.

In what state (however otherwise combined) is iron usually found? Mostly in the state of an oxide; except when combined with sulphur.

What is this combination called? Pyrites: common pyrites, is composed of iron and sulphur, nearly half and half.

What is glass? A compound of silix, and one of the fixed alkalies, completely fused, (i. e. melted) and then suddenly congealed. Silix alone, not mixed with an alkali, could not be completely fused. The fixed alkalies are soda and potash.

Glass is the only known instance of a substance perfectly transparent, produced by the union of two dissimilar and entirely opaque bodies.

ROMAN CEMENT.

By a recent analysis of Parker's Roman Cement, by Monsieur Berthier, he finds that its constituents are of chalk and common clay, and he proposes the manufacture of a similar Cement, by the mere mixture of them in certain proportions:—One part of the clay, and two and a half parts of chalk, sets almost instantly, and may, therefore, be regarded as Roman Cement.